

Greenwich, from 1840 November to 1847 December." By G. B. Airy, Esq., F.R.S. &c., Astronomer Royal. Received January 9, 1851.

The author states, that in a voyage to Shetland, in the year 1849, he heard allusions to the belief entertained generally by Norwegian seamen, that a northerly wind may always be expected about the time of new moon. The expression of this belief was so positive, and the implication of the interests of the persons entertaining it was so distinct, that it appeared to him extremely probable that there was some physical foundation for it. At the first convenient opportunity he therefore took measures for discussing, with reference to this question, the directions of the wind at the Royal Observatory, during a period of rather more than seven years, as ascertained from the records of Osler's self-registering anemometer. He extended the research so far as to enable any one to judge whether there is any probable relation between any direction of wind and any age of the moon.

The collection and summation of the numbers was effected under the immediate superintendence of Mr. Glaisher; and great pains were taken to establish such checks on the operation that error is considered to be almost impossible.

The general result is contained in a table subjoined to the paper. This exhibits the number of hours during which the wind blew in each of sixteen equal divisions of the azimuthal circle, and also the number of hours of sensible calm, in the period extending (with very small interruptions) from 1840 November to 1847 December, arranged in reference to the days of the moon's age. The author remarks, that while this table shows that there is great uncertainty in the verification of an empirical law, even from nearly ninety lunations, it seems very distinctly to negative the asserted law which gave rise to the inquiry.

March 13, 1851.

Lieut.-Col. SABINE, R.A., V.P. and Treasurer, in the Chair.

The following papers were read :—

1. "On the Meteorology of the Lake District, including the results of experiments on the fall of Rain at various heights up to 3166 feet above the sea-level. Fourth paper. For the year 1850." By John Fletcher Miller, Esq., F.R.S., F.R.A.S. &c. Received February 21, 1851.

The observations detailed in this paper are similar to those described by the author in his former papers, and the results deduced from them agree generally with those previously obtained.

In the introductory remarks, the author states that he determined the heights of the different rain-gauges above the level of the sea by

means of an excellent Aneroid barometer (previously compared with a standard), and a standard barometer read simultaneously, or nearly so, at the sea-level; and he gives the heights of the several stations as thus estimated.

The most important fact connected with these observations is stated to be the discovery of a mountain station which promises to yield nearly one-third more rain than the hamlet of Seathwaite in Borrowdale, hitherto, with good reason, considered to be the wettest spot in the three kingdoms. This, the new station, "the Sty," on Sprinkling Fell, is about a mile and a half distant from Seathwaite, in a south-westerly direction, and 580 feet above it, at the extreme southern termination of the valley. The actual quantity of water measured in eleven months of 1850 was 174·33 inches; but as the receiver was found running over on four different occasions, the loss is calculated at 5 or 6 inches at least; and 5·67 is added, making the quantity in eleven months 180·00 inches. Adding to this 9·49 inches, the depth for January computed from that for January at Seathwaite, it appears that the whole depth of rain fallen at "the Sty" in 1850 was 189·49 inches. The author further remarks, that the wettest year since the commencement of the observations was 1848, when 160·89 inches fell at Seathwaite; and computing the fall at the new station for that year, we have 211·62 inches for the depth of rain at "the Sty" in 1848.

2. "On the Rolling Motion of a Cylinder." By the Rev. H. Mosley, M.A., F.R.S. &c. Received March 6, 1851.

The time occupied by a heterogeneous cylinder in oscillating upon a horizontal plane through a *small arc* has been investigated by Euler; and he has determined the *pressure* of the cylinder upon the plane when oscillating through *any* arc, applying the formula he has arrived at to find the pressure upon the plane at the highest and lowest points of oscillation. It is the object of the present paper to endeavour to extend this investigation to the *continuous rolling* of the cylinder, under which more general form its *oscillation* is obviously included as a particular case. In the first part of the paper, the time of rolling through any angle, and therefore of completing any given number of revolutions, is investigated; and in the second, the conditions of the pressure upon the plane at any period of a revolution. The complete determination of the time of rolling involves the integration of a function of the form $\int \left(\frac{\cos \theta - a}{\beta - \cos \theta} \right)^{\frac{1}{2}} d\theta$,

which is shown to be reducible to an elliptic function of the third order, capable of being expressed (by a theorem of Legendre) in terms of elliptic functions of the first and second orders, and therefore of having its numerical value calculated from the tables of Legendre. The theorem resulting from this reduction, when applied to the particular case of the *oscillation* of the cylinder, gives an expression for the time of oscillation, through *any arc*, of a pendulum having a cylindrical axis. If the diameter of this axis be assumed infinitely small, the case becomes that of a pendulum oscillating on